

REMARKS

Claims 1-29 were originally filed in this application. Claims 16-22 were cancelled without prejudice or disclaimer. Claims 30-37 were previously added. Claims 1-13 and 25-29 were withdrawn from consideration, leaving claims 14-24 and 30-37 remaining pending for examination, with claims 14, 30, and 33 being independent claims. No new matter has been added.

Rejection under 35 U.S.C. §112

The Examiner rejected claims 14, 15, 23, 24, 30-32 and 37 under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 14, 15, and 23 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner states that the specification fails to provide support for recrystallized silicon nitride and aluminum oxide or provide sufficient description as to how to form these materials.

Applicants disagree that claims 14, 15, and 23 recite limitations not supported by the disclosure as originally filed. Applicants refer the Examiner to page 16 of Applicants' original application, which states: "In accordance with one or more embodiments, the present invention provides a method of preparing a ceramic article by recrystallizing a ceramic material. The ceramic material can be silicon carbide, silicon nitride, and, in some cases, aluminum oxide. The method can comprise providing a green component comprised of ceramic powder and vaporizing or removing at least a portion of any undesirable contaminant or impurity components from the ceramic powder. The method can also be characterized to include recrystallizing the ceramic powder to form grains, in at least a portion of the article, with a predetermined pore size as well as a predetermined concentration of impurities, active impurity components or both active and inert impurity components." See Application at page 16, lines 21-29 (emphasis added). At least this section of the application provides support for recrystallized silicon nitride and aluminum oxide and the application as a whole provides sufficient description as to how to form these materials.

Applicants also disagree with the Examiner's assertion that claims 14, 15, 23, 24, 30-32 and 37 fail to particularly point out and distinctly claim the subject matter which Applicants

regard as the invention, namely what the impurity is active with and what impurities it is limited to. Applicants refer the Examiner to page 15 of Applicants' original application for a discussion of what the phrase "active impurity" describes: "The phrase 'active impurity component' or 'active impurity' refers to any species that can be transferred from the ceramic article into a substrate or working article before, during or after processing of the substrate or article when such substrate or working article comes in contact or in proximity with the ceramic article." See Application at page 15, lines 16-19. At least this section of the application provides support for "an active impurity component." A method for determining how to calculate the impurity component is also described on page 16, at lines 4-7: "The impurity component concentration can be determined by utilizing any technique that measures concentration. For example, the impurity concentration can be determined by performing an inductively coupled plasma analysis (optical emission or mass spectroscopy), a glow discharge mass spectrometric analysis, or a secondary ion mass spectrometric analysis." Non-limiting examples of species that can be an active impurity include those listed at the last paragraph on page 21 of the application. Thus, an ordinarily skilled artisan would understand how to identify an impurity component in the claimed article as well as determine its concentration therein.

Accordingly, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. §112, first paragraph.

Rejections Under 35 U.S.C. §§ 102 and 103

The Examiner rejected claims 14, 15, 23, 24, 30-34 and 37 under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over the teachings in Japanese documents 10-2287974 (hereinafter "JP '974") and 07-328360 (hereinafter "JP '360").

Applicants respectfully disagree with the Examiner's assertion that claims 14, 15, 23, 24, 30-34 and 37 fail to compositionally define the "active impurity" and therefore fail to limit the impurity level to any specific impurity. Because the phrase is specifically described in the specification of the original application, it takes on and acquires that meaning when the claim is viewed in the context of the application. Applicants respectfully assert that they need not define each term within the context of the claim. As described above, Applicants' original application

contains several discussions of “active impurity,” including one that explicitly describes the meaning of the phrase: “The phrase ‘active impurity component’ or ‘active impurity’ refers to any species that can be transferred from the ceramic article into a substrate or working article before, during or after processing of the substrate or article when such substrate or working article comes in contact or in proximity with the ceramic article.” See Application at page 15, lines 16-19.

Neither reference teaches a ceramic material having an impurity concentration that is less than 1 ppm as claimed in claims 14 and 30. Because neither JP '974 nor JP '360 teaches this element, these claims cannot be anticipated by the teaching of either reference.

Furthermore, the references are directed to ceramic heaters, which do not require the purity levels claimed. The Examiner’s assumption that the disclosed heaters have the claimed purity levels is incorrect because the processing of silicon carbide typically involves machinery, grinding, or other similar processes that necessarily introduce impurities. Fabricating articles having impurities at the level claimed would contradict the objective of the cited references because the resultant heaters would be economically unattractive.

Further, it is an aspect of the invention that is further described in the specification how and what impurities are to be limited in the following example: “a silicon carbide component can be sintered at about 1850° C under an atmosphere comprising hydrogen chloride or chlorine, followed by cooling to between about 1000° and about 1100° C in an oxidizing atmosphere, such as an atmosphere comprising air, to burn off any carbon formed.” See Applicants’ original application at page 18, lines 17-21. It is thus apparent that Applicant does describe in the specification the type of impurities being referred to in the claims, and the Japanese references do no such thing. Therefore, claims 14 and 30 can not be anticipated by either JP '974 or JP '360.

Moreover, neither reference teaches a network of pores as claimed in independent claim 33. The pore size of claim 33 describes those voids or spaces which can be interconnected to form a network. This cannot be the same as the pore structure disclosed in the Japanese references because there is no indication of interconnectedness. The references, thus, do not teach each and every limitation of independent claims 14, 30, and 33.

Dependent claims 15, 23, 24, 31, 32, 34, and 37, which depend from independent claims 14, 30, and 33 cannot be anticipated by and would not have been obvious over the teaching of JP '974 or JP '360 for at least the same reasons.

Claims 33 and 34 were rejected under 35 U.S.C. 102(b) as being anticipated by Holmes et al. (U.S. Patent No. 5,770,324). Applicant respectfully disagrees. Holmes does not teach each and every element of claim 33 or claim 34. Holmes describes an "unsiliconized wafer" as being "between about 6 um and 10 um" as "too large for economical pre-coating." Further, Holmes does not describe a recrystallized silicon carbide article having a network of pores with a specific pore size. There can thus be no basis for a teaching of each and every limitation of these claims.

Claims 14, 15, 23, 24, 30-34, 35-37 were rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the teaching of Dubots et al. (U.S. Patent No. 6,162,543).

Applicants disagree that claims 14, 15, 23, 24, 30-34, 35-37 are anticipated by the teaching of Dubots. The reference fails to teach a ceramic material having an impurity concentration that is less than 1 ppm as claimed in independent claims 14 and 30. Furthermore, the reference does not teach an article with a network of pores as claimed in independent claim 33. The reference, thus, does not teach each and every limitation of independent claims 14, 30, and 33. Therefore, independent claims 14, 30, and 33, as well as the claims that respectively depend therefrom cannot be anticipated by the teaching of Dubots.

Applicants also disagree that claims 14, 15, 23, 24, 30-34, 35-37 would have been obvious over the teaching of Dubots. The rejection is improper because no prima facie case of obviousness has been established that provides any teaching, suggestion, or motivation for an article comprising a ceramic material having an impurity less than 1 ppm. The reference also fails to teach or suggest a ceramic article with a network of pores. Furthermore, there is no teaching or suggestion of pore size.

The Examiner's assumption that the statement in Dubots that typical converted graphite materials contain less than 10 ppm total metallic impurity and less than 0.1 ppm iron impurity covers Applicants' claim that there be "an active impurity component at a concentration of less than 1 ppm" for a recrystallized ceramic is misguided. Less than 10 ppm is not necessarily less than 1 ppm and because there is no indication that it is possible to decrease the impurities via the

techniques of Dubots. Also, the iron impurity noted in Dubots is not analogous to the active impurity component that is described in the original application and above.

As such, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 14, 15, 23-24, and 30-37 under 35 U.S.C. §§ 102 and 103.

CONCLUSION

In view of the foregoing Amendments and Remarks, this application is in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes that the application is not in condition for allowance, the Examiner is requested to call Applicants attorney at the telephone number listed below.

If this Response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this Response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,

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